

# EXHIBIT C



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THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF TEXAS  
DALLAS DIVISION

**ERICSSON RADIO SYSTEMS, INC., and  
ERICSSON GE MOBILE  
COMMUNICATIONS, INC.,**

**Plaintiffs,**

**V.**

**INTERDIGITAL COMMUNICATIONS  
CORPORATION, and INTERDIGITAL  
TECHNOLOGY CORPORATION**

### Defendants.

**Civil Action No. 3:93-CV-1809-H**

Consolidated with  
Civil Action No. 3:93-CV-2119-H

**SPECIAL MASTER'S  
FINAL REPORT AND RECOMMENDATION  
ON  
CLAIM CONSTRUCTION**

**CONFIDENTIAL - FILED UNDER SEAL**

## I. Introduction

### A. Nature of the Suit

Ericsson Radio Systems, Inc. and Ericsson GE Mobile Communications, Inc. (collectively "Ericsson") seek a declaratory judgment regarding the validity, infringement and enforceability of six patents, generally directed to the field of communications technology, that InterDigital Communications Corporation and InterDigital Technology Corporation (collectively "InterDigital") assert that Ericsson infringes. Specifically, InterDigital asserts that Ericsson infringes (1) claims 8 and 11 of U.S. Patent No. 4,817,089 (the '089 patent), (2) claim 1 of U.S. Patent No. 4,912,705 (the '705 pat-



ent), (3) claims 9 and 11 of U.S. Patent No. 5,657,358 (the '358 patent), (4) claims 1, 2, 4 and 7 of U.S. Patent No. 5,687,194 (the '194 patent), (5) claim 3 of U.S. Patent No. 4,811,420 (the '420 patent), and (6) claim 1 of U.S. Patent No. 4,785,450 (the '450 patent). (InterDigital's Motion for Patent Claim Construction and Brief in Support at 1 n. 2 ("InterDigital's Pre-Hearing Brief")).

#### B. Referral to the Special Master

This Court's Order of August 18, 1999, appointed the undersigned as special master in this case and referred "[a]ll pretrial matters involving claim construction and interpretation," including the conducting of a *Markman*<sup>1</sup> hearing, to the special master for a report. In accordance with that Order, a *Markman* hearing was held during April 3-5, 2000. Both parties presented testimony and exhibits said to bear on disputed issues of claim construction. A record of that hearing has been prepared and filed with the court. Additionally, the parties filed post-hearing briefs. After reviewing the transcript of that hearing as well as the exhibits and briefs offered by both parties, and pursuant to the foregoing Order and Rule 53(e)(5), Federal Rules of Civil Procedure, the special master issued a draft report and recommendation on July 14, 2000.

In accordance with Rule 53(e)(5), the parties were invited to provide comments on that draft report and recommendation. Both parties have done so. Additionally, both parties have served replies to those comments. The parties' comments and replies have been fully considered in issuing this final report and recommendation.

#### C. Issued Under Seal

Some post-hearing briefs were designated as having been filed under seal. In the draft report and recommendation it was noted that it was not possible for the special master to determine what information contained in those briefs was actually "confidential" requiring filing under seal. Accordingly, out of an abundance of caution, that draft report and recommendation was likewise designated "CONFIDENTIAL - FILED UNDER SEAL." However, the draft report and recommendation noted the public nature of the proceedings and that such public nature should be preserved to the fullest extent possible. Therefore, the draft report and recommendation requested that the parties advise the special master (1) which portions, if any, of the draft report and recommenda-

<sup>1</sup> *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

tion truly revealed "confidential" information requiring filing under seal, and (2) the specific "confidential" information disclosed that may be deleted in the final report and recommendation. The draft report and recommendation noted that, if at all possible, the entirety of the final report and recommendation should not require filing under seal.

InterDigital's comments on the draft report and recommendation were filed under seal and expressed the belief that "the parties will agree in the near future as to whether portions of [the draft report and recommendation] should remain confidential." InterDigital's Comments at 2. Ericsson's comments were not filed under seal and expressed its belief that none of the information contained in the draft report and recommendation was "confidential" requiring filing under seal. InterDigital's response to Ericsson's comments stated that "InterDigital believes that the Special Master's Final Recommendation need not be filed under seal," but also stated its belief that "the Special Master's Draft Recommendation should remain under seal and need not be attached to the Special Master's Final Recommendation." InterDigital's Response at 2. This final report and recommendation, however, is largely the same as the draft with certain editorial and other changes some of which were prompted by the parties' comments. It thus remains uncertain, in light of InterDigital's above remark, whether InterDigital is truly in agreement that this final report and recommendation need not be filed under seal.

Again, out of an abundance of caution, this final report and recommendation is being filed under seal. However, the parties are strongly encouraged to promptly advise the Court whether this final report and recommendation may be released from seal either entirely or with appropriate redaction.

## II. Claim Construction

### A. Integrated Document

A patent is a fully integrated written instrument. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995)(*en banc*), *aff'd*, 517 U.S. 370 (1996). A patent, by statute, must provide a written description of the invention, a disclosure that would enable one of ordinary skill in the art to make and use the invention, and a disclosure of the best mode known to the inventor for practicing

the invention. 35 U.S.C. § 112(1).<sup>2</sup> A patent must also contain claims “particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(2).<sup>3</sup>

The claims of a patent provide the measure of a patentee’s right to exclude others from practicing the claimed invention, 35 U.S.C. § 154, and are construed in the same manner for determining infringement as for determining validity. Additionally, the claims, as properly interpreted in light of the specification and prosecution history, provide a public notice function. *Merrill v. Yeomans*, 94 U.S. 568, 573-574 (“It seems to us that nothing can be more just and fair, both to the patentee and to the public, than that the former should understand, and correctly describe, just what he has invented, and for what he claims a patent.”).

Accordingly, claims are construed to determine their true meaning and scope. *Markman*, 52 F.3d at 976. That is typically referred to as “claim construction,” and is a matter of law for the court. *Id.* The Federal Circuit has stated that “it is only fair (and statutorily required) that competitors be able to ascertain to a reasonable degree the scope of the patentee’s right to exclude” and that “competitors should rest assured, if infringement litigation occurs, that a judge, trained in the law, will similarly analyze the text of the patent and its associated public record and apply the established rules of construction, and in that way arrive at the true and consistent scope of the patent owner’s rights to be given legal effect.” 52 F.3d at 978-79.

#### B. Patent Claims

The Federal Circuit has instructed the courts that “[t]he actual words of the claim are the controlling focus.” *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998). Patents are written to be read and understood by individuals of ordinary skill in the art, and therefore terms

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<sup>2</sup> 35 U.S.C. § 112(1) provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

<sup>3</sup> 35 U.S.C. § 112(2) provides:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

and phrases used in patent claims should be construed through the eyes of one of ordinary skill in the relevant art. See *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1554 (Fed. Cir. 1997). Technical terms, accordingly, are given the ordinary and accustomed meaning such terms would be given in the relevant art at the time the application maturing into the subject patent was filed, unless the specification or prosecution history indicates that the inventor adopted a different meaning for such term. See *National Recovery Technologies, Inc. v. Magnetic Separation*, 166 F.3d 1190, 1195 (Fed. Cir. 1999). "Absent a special and particular definition created by the patent applicant, terms in a claim are to be given their ordinary and accustomed meaning." *Renishaw PLC v. Marposs Societa' Per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998) ("Thus, when a claim term is expressed in general descriptive words, we will not ordinarily limit the term to a numerical range that may appear in the written description or in other claims. \* \* \* Nor may we, in the broader situation, add a narrowing modifier before an otherwise general term that stands unmodified in a claim. \* \* \*")

The court, in construing disputed terms and phrases in asserted claims may, and perhaps must, consider other unasserted claims as well. *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). "The fact that we must look to other claims using the same term when interpreting a term in an asserted claim mandates that the term be interpreted consistently in all claims," *Southernall Technologies, Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1579 (Fed. Cir.), *cert. denied*, 516 U.S. 987 (1995), unless "the language of the written description is sufficient to put a reader on notice of the different uses of a term, and where those uses are further apparent from publicly-available documents referenced in the patent file" then "it is appropriate to depart from the normal rule of construing seemingly identical terms in the same manner." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1311 (Fed. Cir. 1999). Dependent claims may aid in interpreting the scope of the claims from which they depend, *Laitram Corp. v. NEC Corp.*, 62 F.3d 1388, 1392 (Fed. Cir. 1995), because the court should "not interpret an independent claim in a way that is inconsistent with a claim which depends from it." *Wright Medical Technology, Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997). A court must give meaning to all of the words in a claim, *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572, 1577 (Fed. Cir. 1996), and is not free to read any limitations out of a claim. *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed. Cir. 1995), *cert. denied*, 518 U.S. 1020 (1996).

### C. Specification

Claims are construed in light of the specification. *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 540 (Fed. Cir. 1999). "The written description is considered, in particular to determine if the patentee acted as his own lexicographer, as our law permits, and ascribed a certain meaning to those claim terms." *Digital Biometrics*, 149 F.3d at 1344. In *Johnson Worldwide Associates, Inc. v. Zebco Corp.*, 175 F.3d 985, 990 (Fed. Cir. 1999), however, the Federal Circuit explained that "[i]n order to overcome [the] heavy presumption in favor of the ordinary meaning of claim language, it is clear that 'a party wishing to use statements in the written description to confine or otherwise affect a patent's scope must, at the very least, point to a term or terms in the claim with which to draw in those statements,'" that is "claim terms cannot be narrowed by reference to the written description or prosecution history unless the language of the claims invites reference to those sources." The Federal Circuit further explained that "[o]ur case law demonstrates two situations where a sufficient reason exists to require the entry of a definition of a claim term other than its ordinary and accustomed

meaning.” The first is when “the patentee has chosen to be his or her own lexicographer by clearly setting forth an explicit definition for a claim term.” The second arises “where the term or terms chosen by the patentee so deprive the claim of clarity that there is no means by which the scope of the claim may be ascertained from the language used.”

#### D. Prosecution History

In similar fashion, “[t]he prosecution history is relevant because it may contain contemporaneous exchanges between the patent applicant and the PTO about what the claims mean.” *Digital Biometrics*, 149 F.3d at 1344. The prosecution history is the record of the proceedings in the U.S. Patent and Trademark Office (“PTO”) that involved the examination and ultimate issuance of the subject patent. “[A]rguments made during prosecution shed light on what the applicant meant by its various terms.” *Laitram Corp. v. Morehouse Industries, Inc.*, 143 F.3d 1456, 1462 (Fed. Cir. 1998).

#### E. Construction In Light of Specification

Although the specification may and should be used to guide the meaning of the claims, courts must also guard against improperly reading limitations from the specification into the claims. A familiar pair of claim construction canons are: “(a) one may not read a limitation into a claim from the written description, but (b) one may look to the written description to define a term already in a claim limitation, for a claim must be read in view of the specification of which it is a part. These two rules lay out the general relationship between the claims and the written description. \* \* \* As rules at the core of claim construction methodology, they provide guideposts for a spectrum of claim construction problems.” *Renishaw*, 158 F.3d at 1248. The Federal Circuit has recognized, though, “that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into a claim from the specification.” *Conark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 48 U.S.P.Q.2d 1001 (Fed. Cir. 1998). Nevertheless, the Federal Circuit has made clear that “[i]t is improper for a court to add ‘extraneous’ limitations to a claim, that is, limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim.” *Hogans AB v. Dresser Industries, Inc.*, 9 F.3d 948, 950 (Fed. Cir. 1993). If the court does not need to rely on a limitation to interpret what a patentee meant by a particular term or phrase in a claim, “that limitation is ‘extraneous’ and cannot constrain the claim.” *Renishaw*, 158 F.3d at 1249.

The Federal Circuit has also cautioned that a "preferred embodiment" disclosed in a specification "is just that, and the scope of a patentee's claims is not necessarily or automatically limited to the preferred embodiment." *Ambil Enterprises Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1559 (Fed. Cir. 1996) ("The entire specification, including all of the claims, the prosecution history, and the prior art may all affect the interpretation ultimately placed on the claim language."). On the other hand, in some instances, the written description requirement of 35 U.S.C. § 112(1) warrants a claim construction that encompasses only the disclosed embodiment. See *Laitram Corp. v. Morehouse Industries*, 143 F.3d at 1463; *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1576-77 (Fed. Cir. 1993). "Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. \* \* \* The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Renishaw*, 158 F.3d at 1250.

#### F. Extrinsic Evidence

The Federal Circuit has stated that "[i]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence." *Vitronics v. Conceptor, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). However, the court has also recognized that "the testimony of one skilled in the art about the meaning of claims terms at the time of invention will almost always qualify as relevant evidence." *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1555 (Fed. Cir. 1997). Thus, a court may admit and accept testimony by the parties' expert witnesses as background in the technical area at issue, *Marbach Environmental Corp. v. Hudson Environmental Systems, Inc.*, 152 F.3d 1368, 1372-1373 (Fed. Cir. 1998), and "it is entirely appropriate, perhaps even preferable, for a court to consult trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in the pertinent technical field." *Pitney Bowes*, 182 F.3d at 1309. "But testimony on the technology is far different from other expert testimony, whether it be of an attorney, a technical expert, or the inventor, on the proper construction of a disputed claim term \* \* \*. The later type of testimony may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe disputed claim terms." *Id.* at 1308-1309.

### III.

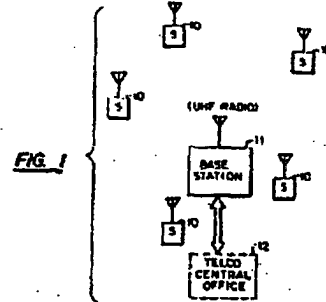
#### The '089, '705, '358 and '194 "System Patents"

##### A. Background

##### 1. Disclosure

The '089, '705, '358 and '194 patents-in-suit, along with U.S. Patent No. 5,119,375 (the '375 patent) and U.S. Patent No. 5,734,678 (the '678 patent) share substantially the same specification and result through a chain of continuation and divisional applications from a common parent, U.S. Patent No. 4,675,863 (the '863 patent), originally filed in 1985.<sup>4</sup> InterDigital refers to those patents collectively as the "Paneth Patents." (InterDigital's Pre-Hearing Brief at 6 n. 11) Ericsson refers to the '089, '705, '358 and '194 patents-in-suit collectively as the "System Patents." (Ericsson's Brief in Support of Claim Construction at 2 ("Ericsson's Pre-Hearing Brief")) The other two patents-in-suit, namely the '450 and '420 patents, derive from separate applications filed in 1987. The following discussion, keyed to the disclosure of the '089 patent, therefore applies to the '705, '358 and '194 patents-in-suit as well, unless otherwise indicated. The '450 and '420 patents-in-suit will be discussed separately.

The '089 patent is entitled "Subscriber RF Telephone System for Providing Multiple Speech and/or Data Signals Simultaneously Over Either a Single or a Plurality of RF Channels." With reference to Fig. 1, the '089 specification explains that "the present invention provides local-loop telephone service using UHF radio between sub-

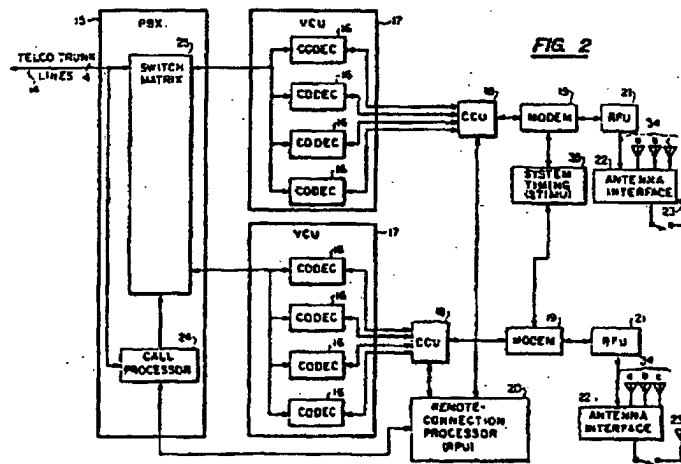


<sup>4</sup> The '863 patent issued on June 23, 1987 from application Serial No. 713,925, filed March 20, 1985. The '089 patent issued on March 28, 1989, from application Serial No. 31,045, filed on March 27, 1987, and was identified as a continuation of the application maturing into the '863 patent. The '705 patent issued from application Serial No. 324,651, filed on March 16, 1989, and was identified as a continuation of the application maturing into the '089 patent. The '358 patent has a somewhat more complicated lineage. The '358 patent issued on August 12, 1997, from application Serial No. 52,013 filed on April 22, 1993, which was identified as a continuation of application Serial No. 831,198, filed on January 31, 1992, which was identified as a division of application Serial No. 634,770, filed on December 27, 1990, now U.S. Patent No. 5,119,375, which was identified as a continuation of application Serial No. 349,301, filed on May 8, 1989, now U.S. Patent No. 5,022,024, which was identified as a continuation of application Serial No. 324,651, filed on March 16, 1989, now the '705 patent, which is a descendant of the '089 and '863 patents as indicated above. The '358 patent has a terminal disclaimer disclaiming any term beyond the term of the '863 patent. The '194 patent issued on November 11, 1997, from application Serial No. 51,762, filed on April 22, 1993. That application identifies a lineage that is the same as the application maturing into the '358 patent, except that application was identified as a division of application Serial No. 831,198. The face of the '194 patent also indicates that its term has been disclaimed.



scriber stations (S) 10 and a base station 11. The base station 11 provides call connections directly between the radio-based subscriber stations 10 and is connected to a telephone company (Telco) central office 12 for calls to or from points outside the system." (Col. 6, lines 16-23) According to the '089 patent-in-suit, "[c]ommunication between the base station 11 and the subscriber stations 10 is accomplished digitally by filtered multiphase differential phase shift keying (MDPSK) modulation on 25 KHz spaced full duplex channels in the 454 to 460 MHz band" pursuant to FCC requirements. The '089 patent explains that "[v]oice transmission is accomplished using 16 level PSK [phase shift keying] modulation and voice digitization with a coding rate of 14.6 Kbps," or, alternatively, "the modulation may be two-level (BPSK) or four-level (QPSK)." (Col. 6, lines 43-59)

Fig. 2 is described as "a block diagram of a representative preferred embodiment of the base station in the system of Fig. 1," (Col. 3, lines 64-66) and as "an embodiment of the base station that supports the simultaneous operation of two pairs of transmit and receive frequency channels." (Col. 7, lines 51-53) According to the specification, "[c]onnection between the PSTN [public switched telephone network] and the subscriber stations are [sic.] established and maintained in the private branch exchange (PBX) 15 which is resident in the base station." PBX 15 is described as "a model UTX-250 system, an off-the-shelf product developed by the United Technologies Building Systems Group." (Col. 7, lines 60-65)



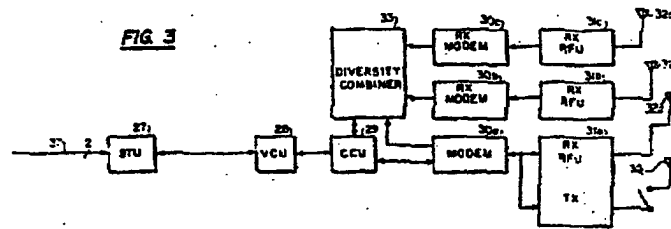
The specification explains that "[t]he PBX 15 also converts voice information to/from the PSTN to 64 Kbps  $\mu$ -law companded pulse coded modulation (PCM) digital samples. From this point on, the voice information is processed in a digital format throughout the base station and the subscriber stations, right up to the interface circuitry connecting to the subscriber telephone, or as far as the subscriber transmitter and receiver permits." (Col. 7, line 68-col. 8, line 7)

According to the specification, "[d]igital voice information from the PBX 15 is next processed by a voice compression system known as a codec 16, which reduces the voice information rate from 64 Kbps to approximately 14.6 Kbps or less." The specification explains that codec 16 uses either a "Residual Excited Linear Predictive (RELP)" algorithm, such as described in a referenced co-pending application, or an SBC [subband coding] encoder-decoder such as described in another referenced U.S. patent to accomplish that voice rate compression. The specification states that "[t]ypically, four codecs 16 reside in a single voice codec unit (VCU) 17 for performing voice compression for the four or more time slots in each frequency channel. Each base station VCU 17 can process four or more full-duplex voice connections for both the transmit channel and the receive channel of each channel pair. Connections by the PBX 15 determine which voice call is processed by which VCU 17 and by which codec 16 in the selected VCU 17. The circuits of each VCU 17 are hardware-mapped such that a voice call on a specific frequency and slot assignment in the base station is always processed by the same VCU codec 16." (Col. 8, lines 8-32)

The specification further explains that each VCU 17 is "connected to a channel control unit (CCU) 18" that "controls the TDMA [time division multiple access] function and also functions as a link-level protocol processor." According to the specification and as shown in the drawing, each "CCU 18 takes the transmit channel outputs of the codecs 16 in the corresponding VCU 17 and transmits the data in the proper time slot and in the proper format to a modem unit 19." The specification states that each "CCU 18 determines the modulation levels, as directed by a remote-control processor unit RPU 20, to be used for the broadcast (such as 2, 4 or 16 level PSK modulation)" and that each "CCU 18 also processes control information for communication to the subscriber stations through the radio control channel (RCC) time slot and during overhead control bits in the voice channels." "Each channel pair," according to the specification, "contains a series-connected combination of a VCU 17, a CCU 18 and a modem 19." (Col. 8, lines 33-49)

The specification explains that the "transmit channel output of the modem 19 is a modulated IF signal. This signal is fed into the RF/IF processing unit (RFU) 21 which then converts the IF signal to the RF UHF signal in the 450 MHz range. Control signals for the modem 19 and the RFU 21 are provided by the corresponding CCU 18, working under the overall control of the RPU 20. The UHF signal is amplified by power amplifiers in the RFU 21 and transferred through an antenna interface unit 22 to a transmit antenna 23 for open-air broadcast." The specification further explains that the "receive function of the base station is essentially the reverse of the transmit function. Each RFU 21, modem 19, CCU 18, VCU 17 and the PBX 15 are full-duplex in nature." (Col. 8, lines 49-68)

According to the specification, Fig. 3 is a block diagram of a subscriber station:



that, according to the specification, has a "functional partitioning" that is similar to that of the base station. Here, the "user interface function is performed by the subscriber telephone interface unit (STU) in the subscriber station," while the "associated function in the base station is performed by the PBX module." (Col. 9, lines 22-28)

The specification explains that "the user voice or data information is first processed by a subscriber terminal unit (STU) 27. The voice signal inputs from the user telephone are received and digitized in the VCU 28. The format for the digitized voice signals is identical to the format used by the PBX 15 in the base station. The subscriber station includes a VCU 28, CCU 29, modem 30a and a RFU 31a that perform similar functions as the like units described above in the base station architecture description related to Fig. 2." (Col. 9, lines 35 - 44)

## 2. Reexamination

On December 12, 1997, after the filing of these actions, InterDigital filed a request for reexamination of claims 2, 3, 4, 5, 10, 13 and 14 of the '089 patent. In its Request for Reexamination,

InterDigital advised the U.S. Patent & Trademark Office (PTO) that the '089, '863 and '705 patents, along with U.S. Patent Nos. 5,022,024, 5,119,375 and 5,121,391 (the '024, '375 and '391 patents, respectively), had been involved in litigation with Motorola, Inc. in the United States District Court for the District of Delaware. See *Motorola, Inc. v. Interdigital Tech. Corp.*, 930 F. Supp. 952 (D. Del. 1996)(the "*Motorola* litigation").

According to InterDigital's Request for Reexamination, Motorola, in that litigation, brought a declaratory judgment action seeking a declaration of non-infringement of those six identified patents. InterDigital counterclaimed for infringement of the same six patents. Before trial, according to the Request for Reexamination, InterDigital abandoned its claim of infringement *vis-à-vis* the '391 and '024 patents, and asserted infringement of 24 claims: '863 patent – claims 1-6 and 10; '089 patent – claims 1, 6-9, 11, 12 and 15; '705 patent – claim 1; '375 patent – claims 91, 133, 162, 178, 213, 218-219 and 224. The jury, according to the Request for Reexamination, returned a verdict that all 24 claims were invalid and not infringed.

Following post-trial motions, the trial court granted InterDigital's motion for judgment as a matter of law (JMOL) in part finding inadequate evidentiary support for the jury's verdict that claims 8, 9 and 11 of the '089 patent were invalid. On appeal, the Federal Circuit affirmed the trial court's grant of JMOL *vis-à-vis* the validity of claims 8, 9 and 11 of the '089 patent, and reversed the trial court's denial of JMOL of validity *vis-à-vis* claim 1 of the '705 patent and claim 178 of the '375 patent. *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 952 (Fed. Cir. 1997).

In the Request of Reexamination, InterDigital noted that the "request provides prior art patents and printed publications from a prior litigation [the *Motorola* litigation] and foreign prosecution which may raise a substantial new question of patentability<sup>5</sup> with respect to the claims. The Requester [InterDigital] does not believe that [those] prior art patents and printed publications render the '089 patent claims unpatentable. However, Requester recognizes that they may raise a substantial new question of patentability with respect to the '089 patent claims." Request for Reexamination of the '089 Patent at 4. The PTO agreed, and proceeded with reexamination. As a result of that reexamination, the PTO issued Reexamination Certificate B1 4,817,089 on February 1, 2000.

<sup>5</sup> Statutory authority for reexamination requires a determination that a "substantial new question of patentability" is raised by the request for reexamination. 35 U.S.C. §§ 303(a), 304.

That Reexamination Certificate confirmed the patentability of claims 3 and 8-11; determined (1) that claims 2, 4, 5 and 14 were patentable as amended during reexamination, and (2) that claims 16-21 added during reexamination were patentable, and cancelled claims 1, 6, 7, 12, 13 and 15.

#### B. The Parties' Proposed Constructions

Both parties have filed proposed "orders," pre-hearing and post-hearing, that essentially re-write the entirety of the asserted claims in what the parties presumably believe are more understandable prose. For example, the parties have filed proposed orders "construing" claim 8 of the '089 patent, which is reproduced for illustrative purposes below. In the following, it should be explained that claim 8 is dependent from claim 1. The "Claims" column is taken from InterDigital's Proposed Order which identifies the claim as claim 8. In actuality, the majority of what is reproduced is claim 1, with the substance of claim 8 appearing only in the last element:

Claims	InterDigital's Proposed Construction	Ericsson's Proposed Construction
8. [Claim 1] A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber stations, comprising	Claim 8 relates to a wireless or radio system for transmission of digital signals. This system includes at least one base station in communication with telephone lines and multiple subscriber stations. The subscriber stations may be either fixed, portable or mobile. The system is capable of transmitting several different voice or data information signals over radio frequency (RF) channels between the base station and each of the multiple subscriber stations at the same time.	The claimed "system" defined in this limitation is limited to a single cell having one and only one base station in communication with a plurality of subscriber stations and analog telephone lines.
conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting	The system includes:  A conversion mechanism at the base station. The conversion mechanism is connected to the telephone lines. The conversion changes analog information signals that are received from the telephone lines into digital signal	The conversion means is located at the single base station.  The recited function of this "means-plus-function" element is converting between analog telephone signals and digital

Claims	InterDigital's Proposed Construction	Ericsson's Proposed Construction
digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;	<p>samples. The conversion also changes digital signal samples received from the subscriber stations into analog information signals which may be sent over the telephone lines.</p> <p>The recited function is converting analog information signals received from telephone lines into digital signals and converting digital signals received from subscriber stations into analog information signals that may be sent over telephone lines.</p> <p>The corresponding structure is conversion devices contained in PBX 15 and equivalents thereof.</p>	<p>signals.</p> <p>The disclosed structure is A/D and D/A converter pairs within a PBX at the base station. The converter pairs convert analog signals to/from 64 Kbps <math>\mu</math>-law companded digital signals. Each A/D-D/A converter pair is connected to an analog telephone line.</p>
signal compression means connected to said conversion means for simultaneously compressing separate digital signal samples derived from said conversion means to provide separate compressed signals;	<p>A signal compressor connected to the conversion mechanism discussed in the preceding paragraph. The compressor derives digital signal samples from the conversion mechanism and provides separate compressed signals for each of the separate digital signal samples. The compressed signal samples have a lower bit rate than the digital signal samples.</p> <p>The recited function is compressing signal samples derived from the conversion means into digital signals of reduced bit rate.</p> <p>The corresponding structure is two or more codecs 16 and equivalents thereof.</p>	<p>The signal compression means is connected to the conversion means.</p> <p>The recited function of this "means-plus-function" element is simultaneously compressing separate digital samples output from the conversion means into separate compressed signals.</p> <p>The disclosed structure is a number of codecs, one codec being connected to a specific D/A and A/D converter pair within the PBX for the duration of a particular call. Each codec implements either a RELP or SBC compression algorithm. Because this means is connected to the conversion means, which outputs <math>\mu</math>-law companded digital signals, it inherently includes structure for changing the <math>\mu</math>-law companded PCM digital signal samples to linear PCM</p>

Claims	InterDigital's Proposed Construction	Ericsson's Proposed Construction
<p>channel control means connected to said signal compression means for sequentially combining the compressed signals into a single transmit bit stream, with each of the respective compressed signals occupying a repetitive sequential position in the transmit bit stream;</p>	<p>A channel control mechanism connected to the signal compressor. The channel control mechanism combines the separate compressed signals from the signal compressor into a bit stream sequence. Each of the compressed signals occupies a slot in the transmit bit stream. The slot is in a defined position over a repeated sequence of slots in a frame.</p> <p>The recited function is combining the compressed signals received from the compression means into a single transmit bit stream.</p> <p>The corresponding structure is CCU 18 and equivalents thereof.</p>	<p>digital signal samples prior to processing by the compression algorithm.</p> <p>As a matter of law, the claim element cannot encompass structure implementing a VSELP or an RPE/LTP compression algorithm.</p> <p>The channel control means is connected to the signal compression means.</p> <p>The recited function of this "means-plus-function" element is sequentially combining the separate compressed signals into a single transmit bit stream, with each of the respective compressed signals occupying a repetitive sequential position in the transmit bit stream. There is no further processing of the compressed signal before it is placed into its sequential position in the transmit bit stream.</p> <p>The disclosed structure is a CCU having a buffer, DMA channel and microprocessor controller programmed such that each separate compressed signal output from one of the multiple codecs is sequentially combined, with each respective compressed signal occupying a repetitive sequential position in the transmit bit stream in the same order in which it is received from its codec. This means there is no further processing of the compressed signals before being placed.</p>
<p>transmitter and receiver means both at said base stations and at</p>	<p>Both the base station and the subscriber have a transmitter</p>	<p>The transmitter and receiver means is at both the base station</p>



Claims	InterDigital's Proposed Construction	Ericsson's Proposed Construction
said subscriber for providing direct communication between said base stations and said subscriber stations over the said radio frequency (RF) channels; and	and a receiver. The transmitters and receivers provide direct communication between the base station and the subscriber stations over the radio frequency (RF) channels.  The recited function of the transmitter and receiver is to provide direct communication between the base station and the subscriber stations over RF channels.  The corresponding structure is the RF/IF Unit (RFU) 21 and the Antenna Interface Circuit 22 and equivalents thereof.	and the subscriber stations.  The recited function of this "means-plus-function" element is providing direct communication between the one base station and its subscriber stations over RF channels.  The disclosed structure is a PSK modem, RFU, and antenna interface and antenna at the base station and each of the subscriber stations.  As a matter of law, the claim element cannot encompass structure that uses GMSK modulation.
each subscriber station operating in a half-duplex mode within a time division multiple access frame wherein it transmits in one portion of said frame and receives in another portion of said frame	Each subscriber station operates in slots of the frame in a mode known as half-duplex. Half-duplex means that the subscriber station does not transmit and receive at the same time.	Each subscriber station operates such that its modem transmits and receives at different times by transmitting to the base station in at least one time slot within a TDMA frame and receiving from the base station in at least one other time slot of the same TDMA frame.
[Claim 8 - The system of claim 1] wherein means are provided for modulating said information signals by phase shift keying prior to transmission thereof.	The system includes a modulation mechanism that varies a radio frequency signal based on the information signals. The modulation mechanism varies the radio frequency signal by phase shift keying.  The function performed by this feature is modulating an intermediate frequency (IF) signal using phase shift keying (PSK) modulation techniques.  The structure disclosed in the >089 patent is the modem 19 and equivalents thereof.	The recited function of this "means-plus-function" dependent claim/element is modulating by PSK prior to transmission.  The disclosed structure is a modem containing structure to perform 2, 4, or 16 level PSK modulation at the base station and each of the subscriber stations.  As a matter of law, the claim element cannot encompass structure that uses GMSK modulation.



The parties' proposed "orders" provide similar "interpretations" for the other asserted claims as well. But trial courts are not permitted to re-write the claims. *Boston Dickinson & Co. v. C.R. Band Inc.*, 922 F.2d 792, 799 n.6 (Fed. Cir. 1990) ("Nothing in any precedent permits judicial redrafting of claims."). In *Markman*,<sup>6</sup> the Federal Circuit instructed trial courts to resolve the meaning of *disputed* claim terms as a matter of law, 52 F.3d at 979, but that does not require the trial court to explain each word, term and phrase in a claim.

In *United States Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997), *cert. denied*, 522 U.S. 950 (1997), the Federal Circuit explained that:

The *Markman* decisions do not hold that the trial judge must repeat or restate every claim term in order to comply with the ruling that claim construction is for the court. Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy. [Emphasis added.]

The Federal Circuit has repeatedly emphasized that "[t]he actual words of the claim are the controlling focus." *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998), and that claim terms and phrases are given their ordinary meaning in the context of the specification and prosecution history, namely the intrinsic record, unless the patentee (1) has exercised her right to be her own lexicographer, and (2) has clearly set out an uncommon definition in the intrinsic record. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992).

Accordingly, and initially, both parties' proposed "orders" regarding claim construction are rejected and are not recommended for adoption by the district court because those "orders" go far beyond what the *Markman* decisions require or even contemplate. Those proposed "orders" would require the trial court to do here what the Federal Circuit has expressly directed the district courts not do, namely rewrite the claims.

Thus, in recognition of the fact that the court must independently review and construe disputed claim terms irrespective of the parties' positions, *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed. Cir. 1995), *cert. denied*, 518 U.S. 1020 (1996), this report and recommendation will focus on those claim terms or phrases in the asserted claims that appear to be in genuine

<sup>6</sup> *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996).

dispute based on the parties' post-hearing briefs. A "dispute" as to the meaning or interpretation of a word or phrase is deemed to arise if there is an underlying disputed issue, for example, whether statements in the specification or elsewhere in the intrinsic record indicate that the patentee intended an uncommon or special meaning for a term or phrase, for example, the meaning of "inventory" in *Markman*, or if a term or phrase is ambiguous. Although the parties' proposed constructions have certainly provided valuable guidance, it is also understood that those proposed constructions may have resulted at least in some part from infringement/non-infringement considerations that must, of course, be wholly divorced from *Markman*-type claim construction. Also, although the parties additionally presented various claim charts prior to the *Markman* hearing, it is assumed that the parties' current positions on claim interpretation are accurately contained in their respective proposed "orders."

### C. "a base station"

The first issue, sometimes referred to as the "single base station" issue, is common to all of the "System" or Paneth patents. Claims in each of the patents call for "a base station."

#### 1. The Parties' Arguments

Ericsson argues that the "intrinsic evidence overwhelmingly establishes that the claimed subject matter of the four 'system patents' – the '089, '705, '358 and '194 Patents – is a system limited to a single base station." Ericsson's Post-Hearing Brief at 2. Ericsson further argues that "construction is reinforced by relevant extrinsic evidence – IDC's [InterDigital's] own representations to the PTO regarding the '420 Patent and the testimony of both Dr. Cox and Dr. Levesque during the *Markman* hearing." *Id.*

In response, InterDigital argues that "[b]ase station' in the Paneth patents means the fixed equipment that enables communications between telephone lines and subscriber stations, including both the switching apparatus interconnected to the public switched telephone networks ('PSTN') and the radio transceivers. \* \* \* Ericsson offers no competing definition." [Footnotes and record citations omitted.] InterDigital's Post-Hearing Brief at 2. InterDigital asserts that "[w]hat Ericsson argues, instead, is that the Paneth patents are limited to 'one and only one' base station because the claimed digital wireless system refers to 'a' base station and 'said' base stations." [Emphasis in original. Footnote omitted.] *Id.* at 2-3. InterDigital says that Ericsson has another agenda in

making that argument, namely that Ericsson "seeks that limitation only to advance its claim of non-infringement – a subject beyond a *Markman* hearing's proper scope." *Id.* at 3.

Ericsson's "single base station" argument, in essence, is that the '089 and related "system" patents are not drawn to the typical cellular telephone system having multiple base stations and cells, but rather are drawn to a single cell system, as reflected in the following colloquy from the *Markman* hearing:

MR. McKOOL: My name is Mike McKool. I represent Ericsson. \* \* \*

\* \* \* \* \*

It is our position that the patents claim and specify a system with a single base station. \* \* \*.

SPECIAL MASTER: Let me ask you, Mr. McKool. When you say that, are you saying one base station per cell or one base station in the world?

MR. McKOOL: Per system.

SPECIAL MASTER: Per system.

MR. McKOOL: Per system. That it is a one-cell system.

SPECIAL MASTER: Now, could you have a number of cells together in this system?

MR. McKOOL: No.

SPECIAL MASTER: No.

MR. McKOOL: It is a one-cell system.

\* \* \* \* \*

SPECIAL MASTER: Let me – I'm still trying to get to what the, I guess, the limits are of your argument, Mr. McKool. Are you saying that a system – that this is limited to having a single base station in the entirety of the United States?

MR. McKOOL: No.

SPECIAL MASTER: No.

MR. McKOOL: It is like a product. They could manufacture numerous systems, but the system itself is a one-cell loop that includes a single base station in communication with a multiplicity of subscriber stations. They could have a system in Dallas. They could have a system in Houston. They could have a system – actually, that's not a very good example. They could have a system in Wyoming. They could have a system in Colorado. They could have a system in Montana. And they could have numerous base stations. But in each loop, in each what they call a system, there's only one [base station].

SPECIAL MASTER: Okay. Could they have a system in Dallas and one in Sherman?

MR. McKOOL: Yes.

SPECIAL MASTER: Okay.

MR. McKOOL: But they couldn't talk to each other. That is our point.

SPECIAL MASTER: The subscribers in Sherman couldn't talk to the base station -

MR. McKOOL: No.

SPECIAL MASTER: - in the Dallas area?

MR. McKOOL: That's right. That's our position.

SPECIAL MASTER: All right.

Transcript at 43-48.

## 2. The Claims

Claims 8 and 11, the two asserted claims of the '089 patent-in-suit, are both dependent claims and provide as follows:

8. The system of claim 1 wherein means are provided for modulating said information signals by phase shift keying prior to transmission thereof.

11. The system of claim 8 wherein the modulation is four level QPSK.

Parent claim 1 provides in its entirety, with emphasis added:

1. A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber stations, comprising

conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;

signal compression means connected to said conversion means for simultaneously compressing separate digital signal samples derived from said conversion means to provide separate compressed signals;

channel control means connected to said signal compression means for sequentially combining the compressed signals into a single transmit bit stream,

with each of the respective compressed signals occupying a repetitive sequential position in the transmit bit stream;

transmitter and receiver means both at said base stations and at said subscriber for providing direct communication between said base stations and said subscriber stations over the said radio frequency (RF) channels; and<sup>7</sup>

each subscriber station operating in a half-duplex mode within a time division multiple access frame wherein it transmits in one portion of said frame and receives in another portion of said frame.

The parties' arguments on this issue focus on parent claim 1. Specifically, as noted above, the parties' respective positions, with emphasis added, on this issue are:

Claim 8 Incorporating Claim 1 of the '089 Patent	InterDigital's Proposed Construction	Ericsson's Proposed Construction
8. [Claim 1] A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber stations, comprising	Claim 8 relates to a wireless or radio system for transmission of digital signals. This system includes at least one base station in communication with telephone lines and multiple subscriber stations. * * *	The claimed "system" defined in this limitation is limited to a single cell having one and only one base station in communication with a plurality of subscriber stations and analog telephone lines.
conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;	A conversion mechanism at the base station. * * *	The conversion means is located at the single base station. * * *

<sup>7</sup> The plural form of "base stations" used here is discussed below.

With respect to the '705 patent-in-suit, claim 1 is the sole asserted claim. That claim provides in its entirety, with emphasis added:

1. A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber stations, comprising

conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;

signal compression means connected to said conversion means for simultaneously compressing separate digital signal samples derived from said conversion means to provide separate compressed signals;

channel control means connected to said signal compression means for sequentially combining the compressed signals into a single transmit bit stream, with each of the respective compressed signals occupying a respective sequential position in the transmit bit stream;

transmitter and receiver means both at said base station and at said subscriber stations for providing direct communication between said base station and said subscriber stations over the said radio frequency (RF) channels; and

means to determine synchronization between the base station and the subscriber stations utilizing a code for exchanging the current state of the connection therebetween, the link quality and the power and timing adjustments.

The parties' respective positions on the "single base station" issue *vis-à-vis* claim 1 of the '705 patent-in-suit are the same as those advanced *vis-à-vis* the '089 patent and are as follows, with emphasis added:

Claim 1 of the '705 Patent	InterDigital's Proposed Construction	Ericsson's Proposed Construction
1. A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber sta-	Claim 1 relates to a wireless or radio system for transmission of digital signals. This system includes at least one base station in communication with telephone lines and multiple subscriber stations. * * *	The claimed "system" defined in this limitation of the claim is limited to a single cell having one and only one base station in communication with a plurality of subscriber stations and analog telephone lines.

Claim 1 of the '705 Patent	InterDigital's Proposed Construction	Ericsson's Proposed Construction
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tions, comprising

conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;

A conversion mechanism at the base station. \* \* \*

The conversion means is located at the single base station. \* \* \*

The claims asserted in the '358 patent are claims 9 and 11. Both are independent claims, and provide as follows:

9. A base station system for providing toll quality digital wireless multiple access terrestrial communication between telephone lines and subscriber stations, the system being capable of simultaneous wireless transmission of forward information and reverse information over a radio frequency (RF) link between the telephone lines and the subscriber stations on forward and reverse frequency channels, the forward information from the telephone lines being applied to a transmitter and the transmitter transmitting forward signals over the RF link from the base station system to the subscriber stations, and a receiver receiving reverse signals from the subscriber station over the RF link and the reverse information being applied to the telephone lines, the base station system comprising:

switching means for coupling the forward information from the telephone lines as forward signals to the transmitter, and the switching means coupling the reverse signals from the receiver as reverse information to the telephone lines;

interconnection means placing the forward signals on a time slot of one of said forward frequency channels, whereby said forward signals may be reconstructed at a subscriber station to provide substantially the same information as the forward information provided on a telephone line, the interconnection means receiving reverse signals over the RF link on the reverse frequency channel from the subscriber stations as reverse signals; and

means to provide a periodic exchange of information during the course of communication operation concerning the present status of the connection between the base station and a subscriber station, the link quality, power, and

timing adjustment thereof and providing adjustment to the subscriber station based thereupon.

11. A subscriber station for providing toll quality digital wireless multiple access terrestrial communication between telephone lines and a base station, the subscriber station and the base station being capable of simultaneous wireless transmission of forward information and reverse information over a radio frequency (RF) link between the telephone lines and the subscriber station on forward and reverse frequency channels, the forward information from the telephone lines being applied to a transmitter and the transmitter transmitting forward signals over the RF link from the base station to the subscriber station, and a receiver receiving reverse signals from the subscriber station over the RF link and the reverse information being applied to the telephone lines, the subscriber station comprising:

set-up means placing the reverse signals on a time slot of one of said reverse frequency channels, whereby said reverse signals may be reconstructed at the base station to provide substantially the same information as the reverse information provided from a user, the set-up means receiving forward signals over the RF link on the forward frequency channel from the base station as forward signals; and

means to provide a periodic exchange of information during the course of communication operation concerning the present status of the connection between the base station and a subscriber station, the link quality, power, and timing adjustment thereof and providing adjustment to the subscriber station based thereupon.

Once again, the parties' respective positions on the "single base station" issue are as follows, with emphasis added:

Claims 9 & 11 of the '358 Patent	InterDigital's Proposed Construction	Ericsson's Proposed Construction
9. A base station system for providing toll quality digital wireless multiple access terrestrial communication between telephone lines and subscriber stations, the system being capable of simultaneous wireless transmission of forward information and reverse information over a radio frequency (RF) link between the telephone lines and the subscriber stations on forward and reverse frequency channels, the forward informa-	Claim 9 relates to a base station system that provides communication between telephone lines and subscriber stations. * * *	<p>* * * * *</p> <p>The claimed system is limited to a single cell having one and only one base station in communication with a plurality of subscriber stations and telephone lines.</p>



**Claims 9 & 11 of the '358 Patent****InterDigital's Proposed Construction****Ericsson's Proposed Construction**

tion from the telephone lines being applied to a transmitter and the transmitter transmitting forward signals over the RF link from the base station system to the subscriber stations, and a receiver receiving reverse signals from the subscriber station over the RF link and the reverse information being applied to the telephone lines, the base station system comprising:

11. A subscriber station for providing toll quality digital wireless multiple access terrestrial communication between telephone lines and a base station, the subscriber station and the base station being capable of simultaneous wireless transmission of forward information and reverse information over a radio frequency (RF) link between the telephone lines and the subscriber station on forward and reverse frequency channels, the forward information from the telephone lines being applied to a transmitter and the transmitter transmitting forward signals over the RF link from the base station to the subscriber station, and a receiver receiving reverse signals from the subscriber station over the RF link and the reverse information being applied to the telephone lines, the subscriber station comprising:

Claim 11 relates to a subscriber station that provides communication with telephone lines and a base station. That communication is digital and by radio. It is also terrestrial, which means that no satellite is involved in the system of claim 11. The communication is toll quality, which means that the quality of the signal is similar in quality to telephone service in the U.S.

\* \* \* \* \*

This limitation requires a subscriber station for providing toll quality wireless multiple access telephone service that supports simultaneous bi-directional communication between telephone lines and a single base station. The claimed subscriber station can only communicate directly with a single base station in a single cell system.

\* \* \* \* \*

In the '194 patent-in-suit, claims 1, 2, 4 and 7 are asserted, and provide:

1. A method for communication of at least one voice signal, comprising the steps of:
  - (1) assigning pathing for processing the information signal to be transmitted over an RF link to a receive unit;
  - (2) capturing in a predetermined manner the information signal being processed according to pathing assigned at substep (1) to produce signal samples representative of the information signal;
  - (3) compressing the signal samples by block encoding or waveform encoding such that the signal samples may be reconstructed at the receive unit to substantially provide the same information as the information signal provided before being processed according to the step (1) wherein the signal sample compression is performed at a given preselected rate;
  - (4) placing the compressed signal samples representative of the information signal in predetermined, discrete positions of each repeating segment of transmit signal channel; and
  - (5) transmitting over an RF link to the receive unit the portion of each segment of the transmit signal channel containing the compressed signal samples representative of the information signal.
2. A method for communicating as in claim 1, wherein said given preselected rate is less than 16 kb/sec.
4. An apparatus for providing a plurality of voice signal channels on a plurality of forward direction carrier frequencies of a terrestrial RF telephone system,
  - each of said forward direction carrier frequencies containing a plurality of slots,
  - each of said forward direction carrier frequencies having an associated predetermined bandwidth which is designed to accommodate one analog voice signal channel therein,
  - said apparatus comprising:
    - a base station comprising:
      - a plurality of circuit paths for processing a plurality of forward direction digitized voice signals from a public switched telephone network;
      - a plurality of compressors for respectively compressing each of said forward direction digitized voice signals by analyzing the speech content of said forward direction digitized voice signals and by using voice compression to form respective forward direction compressed voice signals, each compressed voice signal having a bit rate of less than 16 kb/s;
      - a processor for assigning each of the compressed voice signals onto a dynamically assigned frequency/slot;

a plurality of channel controllers, each for sequentially combining said respective forward direction compressed voice signals into a single transmit channel bit stream, with each of the respective forward direction compressed signals occupying a respective repetitive sequential time slot in the transmit channel bit stream;

a plurality of linear modulators for modulating said plurality of transmit channel bit streams, each of said modulators including a linear amplifier and using modulation to transmit at least 2 bits/symbol at a channel bit rate of between 32 kbps and 64 kbps; and

a transmitter for RF transmitting said modulated signals on said forward direction frequency carriers to at least one mobile subscriber station, whereby said predetermined bandwidth is capable of carrying at least two bidirectional simultaneous conversations.

5. An apparatus as in claim 4 wherein said modulation is M-ary.

7. An apparatus as in claim 5 wherein each said compressor produces a set of coefficients and an additional signal which are contained in each forward direction compressed voice signal, and which are used to reconstruct a respective forward direction digitized voice signal.

The parties respective positions are, with emphasis added:

Claims 1, 2, 4 & 7 of the '194 Patent	InterDigital's Proposed Construction	Ericsson's Proposed Construction
1. A method for communication of at least one voice signal, comprising the steps of:	*****	*****
*****	*****	*****
(5) transmitting over an RF link to the receive unit the portion of each segment of the transmit signal channel containing the compressed signal samples representative of the information signal.	(5) The signal with compressed voice signals in time slots is then transmitted.	***** The transmitting step is limited to communication between a single base station in a single cell system ***.
4. An apparatus for providing a plurality of voice signal channels on a plurality of forward direction carrier frequencies *** said apparatus comprising:	*****	*****
a base station comprising:	The apparatus of claim 4 includes:  a base station.	

**Claims 1, 2, 4 & 7 of the '194 Patent**

\*\*\*\*\*

a transmitter for RF transmitting said modulated signals on said forward direction frequency carriers to at least one mobile subscriber station, whereby said predetermined bandwidth is capable of carrying at least two bidirectional simultaneous conversations.

**InterDigital's Proposed Construction**

\*\*\*\*\*

The modulated signals are then sent by a transmitter on the forward direction carrier frequencies to at least one mobile subscriber station. The bandwidth of the forward direction carrier frequencies is capable of carrying the forward portion of at least two bidirectional conversations at the same time.

**Ericsson's Proposed Construction**

\*\*\*\*\*

\*\*\*\*\*

As a matter of law, the claimed apparatus is limited to a single cell system having one and only one base station in communication with at least one subscriber station.

Ericsson, in asserting that the claims are limited to a single base station, relies on (1) the language of the claims, (2) the specification, (3) prosecution history, and (4) testimony during the *Markman* hearing.

### 3. The Claims and Specification

With respect to the language of the claims, Ericsson notes that the preamble of claim 1 in each of the '089 and '705 patents calls for a "system comprising a base station," and thereafter refers to "base station" in the singular, eg. "said base station" and "the base station."<sup>8</sup> Claim 9 of the '358 patent, Ericsson says, is similar in initially calling for "a base station" and thereafter referring "the base station," "the system," and "the base station." Claim 11 of the '358 patent also, Ericsson notes, refers to "a base station" and thereafter "the base station." As noted above, claim 1 of the '194 patent is drawn to a method and does not specifically refer to either a "system" or a "base station." Nevertheless, Ericsson urges that "assigning pathing" in claim 1 of the '194 patent occurs only within a single base station, relying principally on testimony by the parties' expert witnesses during the *Markman* hearing. Lastly, Ericsson notes that claim 4 of the '194 patent refers to "an apparatus" that comprises "a base station." Ericsson's Post-Hearing Brief at 3-4.

<sup>8</sup> In all of the subject claims, the claim preambles provide antecedent basis for claim terms, give life and meaning to the claims, and provide definitions for the claimed invention. See, e.g., *Pitney Bowes, Inc. v. Heulest-Padard Co.*, 182 F.3d 1298, 1305-06 (Fed. Cir. 1999); *Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620-21 (Fed. Cir. 1995). None of the parties dispute that the claim preambles should be construed as a substantive part of the claims.

As for the specification, Ericsson notes that the drawings and the written description illustrate and describe a single base station. According to Ericsson, "[t]here are over 200 references in the common specification to 'a base station' or 'the base station,' but not a single reference to more than one base station." [Emphasis in original.] *Id.* at 4.

InterDigital responds that Ericsson has overlooked the fact that the term "only one" is used "sixteen times in the Paneth patents to modify fifteen different terms (e.g., 'only one conversation' and 'only one frequency' \* \* \*, but never to modify the term 'base station.' " Ericsson also, according to InterDigital, ignores the actual definition of "base station" in the specification in relation to Fig. 2 as the fixed equipment between the telephone lines and the subscriber stations. InterDigital's Post-Hearing Brief at 3.

In common parlance, the articles "a" and "an" many times imply singularity or one. However, in *Elkay Manufacturing Co. v. Elco Manufacturing Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999) the Federal Circuit noted that in patent parlance, "[w]hile the article 'a' or 'an' may suggest 'one,' our cases emphasize that 'a' or 'an' can mean 'one' or 'more than one,' depending on the context in which the article is used," citing *AbTex, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed. Cir. 1997) ("[T]he article 'a' suggests a single chamber. However, patent claim parlance also recognizes that an article can carry the meaning of 'one or more,' for example in a claim using the transitional phrase 'comprising.'"). Elkay's patent-in-suit was directed to "no-spill" adapters for bottle water coolers. The representative claim called for "an upstanding feed tube \* \* \* to provide a hygienic flow path for delivering liquid from \* \* \* and for admitting air \* \* \* into said container." The district court had determined that the asserted claim language did not preclude a separation of air and water flow. Although the Federal Circuit ultimately reversed based on the prosecution history, the Federal Circuit nevertheless noted that:

The use of the articles "an" and "a" when referring to "feed tube" and "flow path," respectively, suggest a single feed tube with a single flow path for liquid and air. Other language in the claim similarly suggests a single flow path for both fluids. \* \* \* The asserted claims, however, use the open term "comprising" in their transition phrases. We therefore hold that the plain meaning of "an upstanding feed tube \* \* \* to provide a hygienic flow path for delivering liquid from \* \* \* and for admitting air \* \* \* into said container" is not necessarily limited to a single feed tube with a single flow path for both liquid and air. [Citations omitted.]

192 F.3d at 977. Despite the foregoing, the prosecution history convinced the Federal Circuit that the clause was limited to a single feed tube with a single flow path for both liquid and water.

Thus, there are instances in which “a” or “an” should be construed to mean one and only one such as in “a metallic gas confining chamber” construed in *AbTox*. But, as the Federal Circuit recognized in *Elkay*, there are other instances in which “a” and “an” should be construed to require at least one, *i.e.*, more than one is not precluded. When “a” or “an” means only one as in *AbTox*, or one or more as in *Elkay*, depends in the first instance on the context in which those terms are used in the claims.

Here, the language of the claims alone clearly does not preclude more than one base station. Indeed, nothing in the claims *per se* can fairly be said to require that “a” or “an” must be construed to mean one and only one base station as Ericsson urges. Nor does the specification compel that conclusion. Counting the number of times “a base station” or “the base station” is used in the specification offers scant support for an argument that the *claims* are limited to a single base station. The drawings clearly illustrate a single base station and it is not at all surprising that the specification, in describing the invention in reference to those drawings, also refers to “a base station” or “the base station.” That does not necessarily mean that the *claims* are limited to a single base station or a single cell system. Contrary to Ericsson’s assertions, the Federal Circuit in *AbTox* did not add arithmetic, *i.e.*, counting the number of times a term occurs, to the list of claim construction canons that trial courts should apply. Whether a term is used once, twice, thrice or a hundred times is largely irrelevant: what is important is *how* it is used and in *what* context.

By the same token, counting the number of times that “only one” appears in the specification with reference to features of the invention other than the base station provides no support for the contrary argument. When the patentees say, for example, that the invention “provides both a spectral and an economic advantage over existing analog radio-phone systems which can provide for only one conversation at a time on a given frequency channel,” (Col. 3, lines 30-33), or that “[t]his is, of course, only one example \* \* \*,” (Col. 6, lines 65-66), emphasis added, in contexts having nothing whatsoever to do with whether there are multiple base stations or not, the number of occurrences of “only one” is, on its face, irrelevant. Indeed, if the patentees had stated but once in the specification that the described system either (1) encompassed the use of multiple base stations, or

(2) was limited to a single base station, that would be sufficient to resolve the current dispute. The problem is that the patentees said neither.

The parties have not identified anywhere in the specification (and independent review finds none) where the patentees, expressly or in words to the same effect, said either (1) that although the system illustrated and described in the specification uses one base station, multiple base stations could be used, or (2) that the invention is limited to one and only one base station. Thus, resolving the dispute requires turning to the prosecution history.

#### 4. Prosecution History

##### a) Prosecution History of the '089 Patent

Neither party relies directly on the prosecution history of the '089 patent *per se*. Ericsson does, however, point to claim amendments made during the reexamination to explain two occurrences of "base stations" in plural form in the '089 patent. Specifically, during the reexamination of the '089 patent, the PTO rejected claims 2, 4, 5, 10, 13 and 14 over various references. As issued, the '089 patent had but one independent claim – claim 1. That claim, as discussed above, was held invalid in the *Motorola* litigation, and was cancelled during the reexamination. Claim 1, however, used "base stations" (i.e., plural) in two instances in one of the claim elements, namely:

transmitter and receiver means both at said base stations and at said subscriber for providing direct communication between said base stations and said subscriber stations over the said radio frequency (RF) channels; and [Emphasis added.]

In response to the PTO's rejection, InterDigital amended claims 2, 4, 5 and 14. Prior to amendment, each of those claims was dependent from claim 1. InterDigital recast each of those claims as independent claims by incorporating the limitations of claim 1, but in doing so changed "said base stations" (plural) to "base station" (singular) in both occurrences in the "transmitter and receiver means" element. As noted above, InterDigital also added claims 16-21, of which claims 16 and 19 were independent. Both include the "transmitter and receiver means" element, and both use "base station" (singular). Claim 16 was described in InterDigital's remarks accompanying that amendment as including "all of the limitations of claim 8 which allowance was affirmed by the CAFC \* \* \* [plus additional limitations]," and claim 19 was described as including "all of the features of claim 11



which has also been upheld by the CAFC \* \* \* [plus additional limitations]." Amendment of March 26, 1999 at 24-25, Ericsson Ex. 122.

#### b) Prosecution History of the "705 Patent

Ericsson also points out that claim 1 of the '705 patent, which is largely identical to claim 1 of the '089 patent, except for the last claim element in which there is a one word difference indicated below:

##### Claim 1 - '089 Patent

1. A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber stations, comprising

conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;

signal compression means connected to said conversion means for simultaneously compressing separate digital signal samples derived from said conversion means to provide separate compressed signals;

channel control means connected to said signal compression means for sequentially combining the compressed signals into a single transmit bit stream, with each of the respective compressed signals occupying a repetitive sequential position in the transmit bit stream;

transmitter and receiver means both at said base stations and at said subscriber for providing direct communication between said base stations and said subscriber stations over the said radio frequency (RF) channels; and

each subscriber station operating in a half-duplex

##### Claim 1 - '705 Patent

1. A digital wireless system comprising a base station in communication with telephone lines and a plurality of subscriber stations for the simultaneous transmission of information signals over radio frequency (RF) channels between the base station and each of said plurality of subscriber stations, comprising

conversion means at said base station for respective connection to said telephone lines for converting the analog information signals received from said telephone lines into digital signal samples and for converting digital signals received from said subscriber stations into analog signals for transmission to said telephone lines;

signal compression means connected to said conversion means for simultaneously compressing separate digital signal samples derived from said conversion means to provide separate compressed signals;

channel control means connected to said signal compression means for sequentially combining the compressed signals into a single transmit bit stream, with each of the respective compressed signals occupying a respective sequential position in the transmit bit stream;

transmitter and receiver means both at said base station and at said subscriber stations for providing direct communication between said base station and said subscriber stations over the said radio frequency (RF) channels; and

means to determine synchronization between the



**Claim 1 – '089 Patent**

mode within a time division multiple access frame wherein it transmits in one portion of said frame and receives in another portion of said frame.

**Claim 1 – '705 Patent**

base station and the subscriber stations utilizing a code for exchanging the current state of the connection therebetween, the link quality and the power and timing adjustments.

changed both occurrences of the plural form of "base stations" to the singular form "base station." From the changes during reexamination and in the '705 patent, Ericsson concludes that the two occurrences of "base stations" in claim 1 of the '089 patent were typographical errors and furthermore support its position that the claims are limited to a single base station or single cell system:

MR. McKOOL: \* \* \*

But you can see where in the transmitter receiver means section that there's a reference to said base stations. When you turn to the '705 patent, here is '705, which we all agree is supposed to have the same wording for this claim element. We can see it is referred in the singular, and that shows us that it was a typographical error. But, ironically, these plural references become persuasive of our position when you see what happened in the amendment to the '089.

Here's Claim 2 of the '089. IDC used the exact language of original Claim 1 in six amended claims and told the PTO that the language came from original Claim 1. In every case, without exception, the two references to "base stations," plural, were corrected to "said base station." And not only that, the amendment added 32 more references to "base station," in the singular, not one time in the plural.

SPECIAL MASTER: Now, you're talking about during the re-exam of the '089?

MR. McKOOL: That's right.

Transcript at 49-50.

**c) Prosecution History of the '863 Patent**

The crux of Ericsson's "single base station" argument, though, is founded on a statement made during the prosecution of the '863 patent, the direct parent of the '089 patent. That prosecution history, Ericsson says, provides "clear evidence that all of the system patents are limited to a system with one and only one base station." Ericsson's Post-Hearing Brief at 5, Joint Ex. 11.

Statements and representations made in parent and related applications may provide guidance for claim construction. *See, e.g., Wang Laboratories, Inc. v. America Online, Inc.*, 197 F.3d 1377,

1384 (Fed. Cir. 1999), *Elkay Manufacturing Co. v. Ecco Manufacturing Co.*, 192 F.3d 973, 976-77 (Fed. Cir. 1999), *Augustine Medical, Inc. v. Gaymar Industries, Inc.*, 181 F.3d 1291, 1300 (Fed. Cir. 1999), *Loral Fairchild Corp. v. Sony Corp.*, 181 F.3d 1313, 1321 (Fed. Cir. 1999), *Merck & Co., Inc. v. Mylan Pharmaceuticals, Inc.*, 190 F.3d 1335, 1340-41 (Fed. Cir. 1999), *Johnson v. Stanley Works*, 903 F.2d 812, 818 (Fed. Cir. 1990). Attorney arguments, of course, constitute part of the prosecution history, *See, e.g., Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985), that a court may rely upon in construing the claims. It is not necessary to show that the PTO actually relied on the statement or representation. *Laitram Corp. v. Morehouse Industries, Inc.*, 143 F.3d 1456, 1462 (Fed. Cir. 1998) ("fact that an examiner placed no reliance on an applicant's statement distinguishing prior art does not mean that the statement is inconsequential for purposes of claim construction.").

The application maturing into the '863 patent was originally filed with 31 claims, of which claims 1, 14 and 23 were independent. Claim 1 called for:

1. A system for the wireless transmission of multiple information signals utilizing digital time division circuits between a base station and a plurality of subscriber stations, said subscriber stations being selectively fixed or movable.

Joint Ex. 11, JME 01659. Claim 1 and dependent claims 2-8 and 11-12 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 4,562,572 to Goldman et al. Other claims dependent from claim 1 were rejected under 35 U.S.C. § 103 in view of Goldman et al. alone and in view of other references. Claims 14-31 were allowed. Joint Ex. 11, JME 01751. In response, InterDigital (or more precisely, its predecessor-in-interest) cancelled *inter alia* claim 1 and added claims 32-43. Joint Ex. 11, JME 01756 *et seq.* New claim 32 called for:

32. A system for the wireless transmission of information utilizing digital time division multiple access circuits comprising

transmission and reception means for transmitting and receiving two separate sets of digital data, one of said sets constituting information signals and the other of said sets constituting control signals,

means for transmitting and receiving said information signals over a common channel at a plurality of subscriber stations, each of said subscriber stations being positioned at a different location, and

the transmitted and received information signals being selectively provided at each of said subscriber stations in response to predetermined control signals,

said subscriber stations being selectively fixed or movable.

Joint. Ex. 11, JME 01757.

In remarks accompanying that amendment, InterDigital, through its predecessor-in-interest, attempted to distinguish claim 32 as follows, with the portion that Ericsson relies upon shown in bold:

Claim 32 clearly and patentably distinguishes over the prior art and specifically over the cited Goldman et al. patent for the following reasons: Goldman et al. disclose a cellular system for the transmission of analog information signals (voice) between cells. They utilize digital signals only for control data. They also connect network nodes to each other through the network control system (NCS), as is clearly shown in Fig. 1. In applicant's system, on the other hand, the digital information connection is not between network nodes but between the base station (which is, itself, a terminating network node) and a plurality of subscribers within what is, in effect, one cell, using a common channel. Goldman et al. provide trunk lines that are point-to-point, not point-to-multipoint as in applicant's system. In applicants' system you may have a plurality of subscribers randomly located and capable of substantially simultaneously transmitting and receiving over a common radio channel.

Applicants use time division multiple access (TDMA) in connecting the multiple subscribers to the base station, whereas Goldman et al. use only time division (TDM), and, furthermore, only between the cell sites and the controller, not between a base station and multiple subscribers as in applicants' system. Applicants' system, in other words, utilizes the same propagation path (link) for all the subscribers that are connected to an individual base station, whereas Goldman et al. use a plurality of links for connecting each cell to each other cell. [Emphasis added.]

Amendment of January 28, 1987 at 3-4, Joint Ex. 11, JME 01758-59.<sup>9</sup> As might be expected, the parties construe those remarks quite differently.

Ericsson says that "IDC here acted as its own lexicographer, defining its 'system' as requiring a base station that is a terminating node, thus precluding a multiple base station system." [Emphasis added.] Ericsson's Post-Hearing Brief at 5. Ericsson's position, indeed, was supported by an expert witness, Dr. Levesque, proffered by InterDigital. During the *Markman* hearing, Dr. Levesque

<sup>9</sup> The file history indicates that claim 32 was subsequently amended apparently as the result of a telephone interview with the examiner on February 24, 1987. The file history also reveals telephone interviews with the examiner on February 25, 1987 and March 6, 1987. The Examiner Interview Summary Record of the March 16<sup>th</sup> interview states "Agreed to cancel claims 2 to 5, 8 to 13, and 32 to 43. Agreed to amend claim 23, line 24 by changing ' . ' to - ; - ." A notice of allowance then issued on March 16, 1987, allowing claims 14-31.

initially testified during direct examination that he disagreed with Ericsson's view of the prosecution history:

Q. (By Ms. Addison) Dr. Levesque, are you familiar with the Goldman reference?

A. Yes. I read the Goldman patent.

Q. Are you familiar with the piece of prosecution history referenced by Ericsson counsel this morning in opening statement regarding the applicants distinguishing over the Goldman reference?

A. Yes, I am.

Q. Would you please tell the Court whether you agree or disagree with the characterization you heard this morning?

A. No. I'm afraid I'd have to disagree with that.

Q. Would you please tell the Court what the Goldman patent teaches or taught?

A. Okay. Fine. By my reading, what the Goldman patent teaches is a system for using digital transmission, digital multiplex transmission, to convey control signals between multiple cell sites, between cell sites using a device, a node labeled, I believe, a network control system. Control signals are passed through that network control system. But the key point to the patent is that it is teaching the use of multiplex digital signals for communication between cell sites. I believe the term this morning base stations was used, but I believe the language in the Goldman patent is cell sites.

Q. Dr. Levesque, while you've been speaking we've flashed up the first figure from the Goldman reference in front of you. Have you completed your explanation or would it assist you in explaining to use this figure from the patent?

A. Well, what this figure shows here is in the center is a network control system, and this – the figure is depicting links that will connect multiple – these are cell sites. These hexagons in the figure, perhaps I should turn a bit and point. These hexagons are depicting cell sites in a system that has multiple cell sites. And here we have a network control system that control signals in digital form, multiplexed in digital form are passed between these cell sites through this network control system. I might add that along with – on these links along with control information, of course, is traffic that is carried between cell sites as well.

Q. Are you aware – let me put it up in front of you the piece of prosecution history at issue.

You see the language there within what is, in effect, one cell?

A. Yes.

Q. Would you please tell the Court your understanding of how applicants distinguished over Goldman and what this language means to you as one skilled in the art?

A. I read that language as emphasizing the fact that we're -- on the one hand, Goldman is talking about the use of TDM multiplexed digital signals going between cell sites. Paneth is talking about the use of TDM between the base station and subscriber stations. In other words, over the wireless interface. The Goldman patent is passing those digital signals over wired links between cell sites and the Paneth patent, instead, is using digital transmission, time division multiplexing, to talk between a base station and subscribers. And so that language there, that I read that as a parenthetical remark to emphasize the fact that Goldman is going between cell sites and Paneth is going between the base station and subscriber station.

Q. Dr. Levesque, based on this piece of prosecution history, is there any reason whatsoever to -- from a technical standpoint to construe this patent as being limited or this preamble as requiring the insertion of the term "single cell"?

A. I see no technical justification for that.

Transcript at 162-165.

Later, however, after further intervening questions, Dr. Levesque testified:

SPECIAL MASTER: Counsel, may I ask a couple of questions before we move on?

MS. ADDISON: Certainly.

SPECIAL MASTER: Could we go back to that slide, please?

Dr. Levesque, this is actually referring to the single base station issue. I think you heard Ericsson this morning rely on a portion of that same prosecution history that we've been talking about, defining over the Goldman reference where there is also a statement that in the applicant system the base station was terminating node. Do you remember that?

A. I remember that, yes.

SPECIAL MASTER: Is it possible to bring that up on the screen? You see what's on the screen, the parenthetical which is, itself, a terminating network node?

[Referring to the foregoing Amendment of January 28, 1987: "In applicant's system, on the other hand, the digital information connection is not between network nodes but between the base station (which is, itself, a terminating network node) and a plurality of subscribers within what is, in effect, one cell, using a common channel."]

A. The base station, yes, which is, itself, a terminating node. Yes, I see that.

SPECIAL MASTER: And as I understood Ericsson this morning, that was at least one portion that they were relying on to say that the base station in this system is a single base station. Was that your understanding as well?

A. That was my understanding, yes.

SPECIAL MASTER: Is that your understanding? I mean, what do you say in response to that, I guess, is my question.

A. Well, the interpretation of a terminating node from the point of view of a telephone network is a point at which the telephone network will then interface with some other network. So, from the point of view of the telephone network, from the point of view of calls coming in from the telephone network, that would be the last point in the telephone network that the call connection would reach whatever – whatever the connection is to the telephone network, when the call, so to speak, exits that network and goes into another network, I would think it would be logical to label that as a terminating node.

Transcript at 175-76. Dr. Levesque then further testified that he would view the language in the amendment as describing a single base station system:

SPECIAL MASTER: All right. Well, by this use of the base station as being a terminating network node, does that limit this to a single base station in a system?

A. I'm not sure. I'm not sure how to answer that. If we have only one connection point to the public network, then whatever exists at that point where we reach to the edge of the public network and we go into another network, that is – that is certainly – that is certainly a terminating node for the call connection coming out of the public network. Whether that has to be a single base station or not, I think depends on what's on the other side of that connection. Are you asking whether that – whether the definition of the terminating node restricts this to being a single base station?

SPECIAL MASTER: Yes, in part. Let me ask it this way: In reading this response, would you as one of ordinary skill in the art believe that the system they were describing when they're referring to the applicant system is a single base station system?

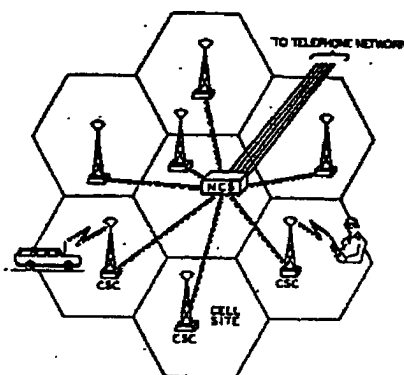
A. Yes. I would say in this language that it is describing a single base station system.

SPECIAL MASTER: All right. You may proceed, Counsel. [Emphasis added.]

Transcript at 176-77. Despite that testimony by its own expert witness, InterDigital argues that the "Paneth '863 amendment did not even remotely concern the number of base stations in a system." Instead, InterDigital argues, "in that amendment InterDigital distinguished the Goldman reference because Goldman used time division circuits only for connections between cells and only over wired links, while the Paneth patents used time division circuits for connections within a cell over a wireless link. Thus, the Paneth '863 Amendment deal with connections within a cell, not the 'system' components or number of cells." [Emphasis in original.] InterDigital's Post-Hearing Brief

at 4. On review of the Goldman et al. patent and its prosecution history, however, InterDigital is only partially correct.

Fig. 1 of the Goldman et al. patent illustrates the following:



Dr. Levesque testified that the Goldman et al. reference does not use the term "base station:"

Q. (By Ms. Addison) Dr. Levesque, does Goldman use the term "base station"?

A. No, it does not.

Transcript at 177-78. On independent review, Dr. Levesque is correct that Goldman et al. do not use the precise term "base station," but from the specification it is clear that the towers in the above illustration represent what Goldman et al. refer to as "base transceivers" or "base radio 'stations'" serving cell sites (represented by the hexagons) and that the illustration of an individual and an automobile represent mobile units of a cellular mobile radio telephone system. Goldman et al., in their specification, explain that:

Cellular Mobile Radio Service (CMRS) is a fully automatic radiotelephone service for use by mobile, portable, or stationary units specifically designed with sophisticated digital controls and logic. The radiotelephone units utilize radio frequency to communicate with low power, limited radiation base transceivers in a cellular pattern making it necessary for the system to locate each mobile unit and follow it enroute by "handing off" in-progress calls between cells. The low power, limited radiation elements of CMRS systems allow a unique frequency distribution and reuse scheme to provide sufficient channels to serve any number of subscribers (i.e., 100,000).



The mobile radios are intelligent units; that is, they contain a microprocessor equivalent logic element. They store certain permanent information (i.e., unit manufacturer's serial number), semi-permanent information (i.e., registration memory), temporary memory containing individual call data and timers, etc. \* \* \*

The base radio "stations" are located in a pattern of "cells" of from about 1 mile to up to 10 miles across which form a patchwork coverage of the desired area. Each cell operates with several assigned channels selected so that they do not interfere with channels of near by cells. Due to the restricted power and range of cell radio transmitters, each set of cell frequencies may be reused in a cell only a few miles away.

Col. 1, lines 9-42. A legend on the above figure (not reproduced) shows voice and data communications between the mobile stations and the "base radio stations" and between the "base radio stations" and the box labeled "NCS," i.e., "Network Control System." The figure illustrates voice communication from the NCS to a "Telephone Network." The specification discloses analog communication between the mobile units and the "base radio stations," and both analog (Fig. 3, col. 5, lines 47-53) and digital communications (Fig. 4, col. 5, lines 54-59) between the "base radio stations" and the NCS. In short, Goldman et al., in general, disclose a typical cellular mobile radio telephone system. Their particular contribution was a cellular mobile radio system having "switched-through control," and much of their patent focuses on the structure of the NCS. See, e.g., Col. 1, lines 51-64.

Returning to the disputed claim amendment, claim 32 now called for digital voice ("information") and control data communication with the "subscriber stations." InterDigital argued that:

Claim 32 clearly and patentably distinguishes over the prior art and specifically over the cited Goldman et al. patent for the following reasons:

Joint Ex. 11, JME.01758. Those reasons were essentially two. First Goldman et al., according to InterDigital, did not disclose the use of digital voice/information signals:

[1] Goldman et al. disclose a cellular system for the transmission of analog information signals (voice) between cells. They utilize digital signals only for control data.

*Id.* Secondly, InterDigital argued that, unlike the Goldman et al. system, InterDigital's was "in effect, one cell" wherein the base station was the "terminating network node:"

[2] They [Goldman et al.] also connect network nodes to each other through the network control system (NCS), as is clearly shown in Fig. 1. In applicant's sys-